WORKING PAPER

MEASURING THE COMPLIANCE COST OF TAX EXPENDITURES: THE CASE OF RESEARCH AND DEVELOPMENT INCENTIVES

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MEASURING THE COMPLIANCE COST OF TAX EXPENDITURES: THE CASE OF RESEARCH AND DEVELOPMENT INCENTIVES

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SYNOPSIS

This study quantifies the compliance costs associated with the tax incentives for scientific research and experimental development (SR&ED) through a survey of companies. The main finding is that, despite the reputedly extensive financial and technical record keeping required to support an SR&ED claim, the compliance costs of SR&ED credits are quite low in aggregate — 0.7 percent of the credits claimed. Thus, it appears that the perceived low level of research and development (R&D) activity in Canada is not a result of high compliance costs associated with the SR&ED program. However, there could be some discouragement effect on R&D activity for firms with relatively low SR&ED credit claims. While the average compliance cost of SR&ED claims is less than 1 percent of the claim, firms with claims under $200 have compliance costs of 15 percent or more.

Since a large portion of federal R&D spending is also delivered through grants (24 percent for tax credits versus 17 percent for grants), this study also investigates, although to a more limited extent, the compliance costs of grants, which were also low (2 percent). In fact, for those firms receiving both grants and SR&ED credits, grants had a lower compliance cost per dollar received. However, this figure does not take into account the costs borne by unsuccessful applicants.

Since this appears to be the first study to examine the compliance costs associated with a particular tax expenditure, two findings may be of broader interest.

- While past studies have found that smaller firms incur disproportionately high compliance costs, this study suggests that, for tax expenditures, the size of the claim may be more important. Firms with small claims incur high costs, even if the firm is large.

- For some tax expenditures, compliance costs may result mainly from work required from technical and scientific employees rather than from accounting employees. In this study, about two thirds of the compliance costs are of this type. This could be a problem for smaller firms because much of the scarce time of the company principals may be diverted from the actual R&D work to tax compliance.

1. INTRODUCTION

Tax laws should represent a compromise among several goals. One goal is simplicity, of which a key component is keeping to a minimum the "compliance costs" incurred by taxpayers when assessing their tax liabilities.[1] As Adam Smith has said: "Every tax ought to be so contrived as both to take out and to keep out of the pockets of the people as little as possible over and above what it brings to the treasury of the state."[2]

Tax simplification has seldom been an important objective of tax policy in Canada. The major exception is the exercise in small business tax simplification in the early 1980s, which resulted in the elimination of the cumulative deduction account. One possible reason for the lack of prominence of tax simplification in the tax policy process is the paucity of empirical evidence about the compliance costs of alternative tax policies.

The few reported studies of compliance costs have focused on estimating the total compliance costs of particular taxes and examining how these costs vary with the demographic characteristics of particular taxpayers. François Vaillancourt's 1989 study of the Canadian personal income tax and payroll tax system estimated that total compliance costs were 6.9 percent of revenues collected, with the main determinant of the costs to individuals being the complexity of their tax situation in terms of types of income, use of tax shelters, etc.[3] Similarly, a 1993 study by Plamondon & Associates concluded that businesses in the sample with sales under $200,000 incurred about $4 in costs for every $1,000 in sales, while businesses with over $1 million in sales had much lower costs — $0.60 per $1,000 of sales.[4,5]

Studies of the total compliance costs of particular taxes provide a general sense of the magnitude of compliance costs and offer useful generalizations about how these costs vary with the type of taxpayer. However, they are often more relevant to decisions about the introduction or abolition of entire taxes than they are to the usual piecemeal reform of particular tax provisions as found in most annual budgets. Studies to support the less-comprehensive reform need to determine whether there are certain provisions of the tax law or its administration which create a disproportionate share of these costs and, if so, to identify the appropriate remedial amendments. As Richard Bird has said: "In taxation, it is usually the details that matter, and this dictum is also true with respect to cost studies."[6]

There is reason to believe that tax expenditures may involve significant compliance costs.[7] In all tax expenditures, there is a need for targeting to ensure that public funds are spent (or revenues foregone) only for those activities or expenditures the government wishes to encourage or to recognize. This targeting may take the form of increased auditing, a complex definition of qualifying activities or expenditures, or special "backstopping" rules needed to police the borderline.[8] All these measures inflate compliance costs, and may even limit the ability of the tax expenditure to induce the desired behavioural change — taxpayers may conclude that the offered incentive is not worth the effort involved. Quantitative studies of compliance costs can assist governments in making the appropriate trade-off between targeting and simplification.

Tax incentives for SR&ED exhibit this tension between targeting and compliance costs.[9] SR&ED tax incentives represent a major portion of federal government R&D spending. However, because of the fiasco of the scientific research tax credit in the early 1980s, the targeting of SR&ED incentives has received a great deal of attention from Revenue Canada.

The documentation required to support an SR&ED claim is extensive. First, there must be a scientific justification, which proves to a Revenue Canada science advisor that the activities involve the required degree of scientific or technological innovation to qualify as SR&ED. Second, there must be financial records to satisfy a Revenue Canada auditor that the expenditures involved are directly attributable to the research and development project. Revenue Canada has been vigorous in auditing SR&ED claims. For example, in many cases, taxpayers who are claiming an investment tax credit refund must be audited before a refund cheque is issued. These factors alone suggest that the compliance costs associated with SR&ED incentives may be high and hence are worthy of investigation.

In addition to compliance costs of possibly being high for SR&ED incentives, a second reason for investigating the compliance costs associated with SR&ED incentives is that, although Canada's system of tax incentives for research and development has been identified by the Conference Board of Canada as being the most generous in the industrialized world,[10] dissatisfaction remains with the level of research and development spending by Canadian businesses. One hypothesis is that the compliance costs of the SR&ED incentives are reducing the effectiveness of this important component of government R&D support.

This study quantifies the compliance costs associated with the federal SR&ED incentives through a survey of companies active in research and development.[11] And, since a large portion of total federal R&D spending is delivered through grants,[12] the compliance costs of grants are also investigated. Consequently, this study makes a contribution to the literature on the choice between grants and tax incentives for business.[13]

The authors are mindful of serious methodological limitations to the data collection which are explained in detail below. While these limitations are common to many empirical studies in tax research and will continue to exist as long as tax records remain confidential, they must be acknowledged from the outset. Their effect is such that one must be cautious in generalizing from the survey results to SR&ED claimants as a whole.

2. METHODOLOGY

The study was carried out using a written survey in the spring and summer of 1994. (The questionnaire used in the survey is reproduced in Appendix A.) Because of the complexity of the information requested, each respondent was asked to attend a 90-minute focus group during which the survey would be given out and reviewed in detail, the objectives would be discussed and questions would be answered. For the most part, questions were objective/factual, and the potential for interviewer bias was minimal. After attending the focus group, respondents returned to their offices (phoned a contact person for further clarification if necessary), gathered the required data and mailed in the questionnaire. About two thirds of respondents participated in the focus groups. The respondents who were unable to attend a focus group became part of a conference call lasting as long as a focus group and covering the same issues. While lacking the face-to-face contact, this made it much easier to get respondents to agree to take part in the study.

The study faced a basic methodological problem common to much of the work in this field: no universal list of SR&ED claimants is publicly available because of privacy restrictions in the *Income Tax Act*. Only a tiny fraction of corporations make an SR&ED claim — much less than one percent of all corporations.[14] It was therefore impossible to use random selection to choose survey respondents or to verify that the survey respondents were statistically representative of all SR&ED claimants.[15]

Respondents were selected through requests to industry groups actively engaged in R&D. (See the complete list in Appendix B.) These groups provided names of companies and contacts. In some cases, the industry group contacted its members directly and asked for volunteers. In other cases, the group publicized the study to its members and then provided its membership list to the authors, who randomly selected members and contacted them with a request to participate. To ensure that a reasonable number of respondents were also receiving government grants supporting their R&D, Industry Canada supplied the names of companies which had received funding from the Industrial Research Assistance Program (IRAP) of the National Research Council. A sample of companies from this list was also asked to participate.

The lack of random selection of companies and the inevitable sampling biases place obvious limitations on the study. The most apparent bias is the lack of participation of very small R&D performers, presumably because they are less likely to participate in industry associations. A second bias is that the industry associations often selected members they believed would be interested in participating. These are more likely to be R&D performers with a reasonable degree of experience with the tax credit program, which likely affects compliance costs. These companies are also more likely to have opinions, positive or negative, about the program.

The study was constrained by its budget. This affected the geographic diversity of the participating corporations. The sample was limited to companies with head offices in Ontario.[16] Although some companies carried on R&D in other provinces as well as Ontario, most of the R&D was Ontario based. This represents an additional bias to the results. While no conclusion

can be drawn about the differences between companies in Ontario versus the rest of Canada, some industries with a regional orientation, such as oil and gas or aquaculture, are not represented in the study.

Finally, it should be noted that the sample size (51) is small. In part, this is due to the time commitment required of potential respondents — four to six hours including the focus group. In addition, some potential respondents declined to participate because they believed that the results would not have any significant impact on the behaviour of government departments in the design or administration of the SR&ED tax credit program. This may create a non-respondent bias, i.e. the companies selected may not be statistically representative of the population of SR&ED claimants. Unfortunately, Revenue Canada did not provide the population information needed to assess the magnitude of this bias.

For all these reasons, the study may not be a statistically accurate picture of the compliance costs of the SR&ED tax credit program. In particular, the results may not be representative of the compliance costs or views of smaller R&D performers or those outside Ontario. The non-respondent bias is unknown. On the other hand, the total amount of SR&ED claims of the sample on the most recent federal income tax return was $340 million, which represents about 30 percent of the SR&ED claims for all of Canada ($1.14 billion).[17] Also, as discussed in the next section, the companies were representative of a variety of industries, sizes and other variables.

The survey instrument contained three basic types of questions.

First, there were questions about the survey companies themselves — whether the companies were Canadian or foreign-controlled, or whether they were or were not entitled to the 35 percent refundable tax credit. Part V of the previous version of Revenue Canada's T661 form requested information on revenues, number of employees and fields of technology. Respondents were told they could provide a photocopy of information already supplied to Revenue Canada with their tax credit claim. This approach turned out to be problematic: many respondents clearly had not put much effort into completing that information fully and/or accurately. In particular, there were problems with the question which requested annual revenue, expressed in thousands of dollars. Some respondents had not answered this question in Part V of the Revenue Canada's T661 form, and others apparently ignored the instruction that it was to be expresssed in thousands of dollars. The authors were forced to abandon any attempt to characterize the companies by revenue. Fortunately, the number of employees can be used as an alternative measure of firm size.

The second part of the survey was the largest. It asked about:

- the costs of learning about the SR&ED tax credit program;
- complying with its requirements on an annual basis;
- complying with requirements of a Revenue Canada audit; and
- complying with the requirements of various government grant programs for R&D.

To simplify the exercise, respondents were asked at the beginning of the survey to estimate the average hourly cost (including incremental overhead) of two categories of employees involved in compliance with the SR&ED tax credit or R&D grant program: "technical" and "accounting" employees. A technical employee would participate in the documentation or assembly of technical information for the SR&ED tax credit or grant claimed. An accounting employee would participate in assembling the financial information required for either the SR&ED tax credit program or an R&D grant.

In the balance of the survey, respondents were asked to indicate how many hours would have been spent by their technical and accounting employees in completing a range of tasks. They were also asked for dollars paid to outside consultants for these tasks. The conversion of hours spent to cost was part of the analysis of the data by the authors.

The third and relatively brief part of the survey sought qualitative opinions about the compliance costs of SR&ED tax credits and R&D grants. Respondents were asked to rank on a scale of 1 to 5 the cost of the grant or tax credit program relative to the benefits received, where 1 was low, 3 acceptable and 5 high. They were then asked whether, on balance, they believed the cost, relative to the benefits, of the SR&ED tax credit program was higher than that of R&D grant programs, or vice versa. Finally, they were asked for any other qualitative comments they wished to make about the compliance costs of either SR&ED credits or R&D grants.

Because the focus of the survey was SR&ED tax credit compliance costs, the questions in the final section on R&D government grant compliance costs were fewer and less detailed. The variety of different government grants that the survey companies may have received also made it difficult to break the costs down into particular tasks which vary across grant programs.

3. PROFILE OF COMPANIES SURVEYED

A total of 111 companies were contacted and asked to participate in the study. Sixty-one agreed to participate, and were sent questionnaires.[18] Of those, 58 participated in focus groups and 52 ultimately returned questionnaires. One company was disqualified since it had not yet submitted its first SR&ED tax credit claim (it wanted to participate in order to submit qualitative comments). Table 1 summarizes some key characteristics of the companies surveyed.

Twenty-five of the 51 companies had also received an R&D government grant. As noted above, it is not possible to analyze the companies by annual revenue. However, the median number of employees by company was 143, with one third of the firms having less than 50 employees and one third having more than 700. The median number of R&D personnel was 44, with one third of companies having 18 or fewer R&D employees and one third having 350 or more R&D employes. The most common field of technology was information technology, followed by various manufacturing sectors. However, industry data is not available for all our

Table 1
Profile of Companies Surveyed

COMPANY	
Canadian-controlled and entitled to the 35% refundable SR&ED credit	41%
Canadian-controlled and entitled only to the 20% SR&ED credit	31%
Foreign-controlled	27%
Percentage of companies receiving government grants	49%
Median number of employees	143
Median annual R&D expenditures	$2.1 million
CLAIM SIZE	
SR&ED claim under $200,000	22%
SR&ED claim between $200,000 and $1 million	46%
SR&ED claim between $1 million and $10 million	18%
SR&ED claim $10 million and above	14%
TECHNOLOGY	
Information technology	35%
Materials	8%
Manufacturing	16%
Biotechnology	6%
Environment	4%
Energy	6%
Combination/other	25%

sample companies because of the above-noted problems with data from the T661 form. Therefore, cross-tabulations of industry by other firm characteristics would not be helpful.

4. SURVEY RESULTS: SR&ED TAX CREDITS

The questionnaire divided compliance costs into three types:

- annual compliance costs
- start-up costs
- audit costs.

Annual compliance costs were defined as "costs that occur routinely every year" and were to exclude "costs caused by extraordinary events in the year such as start-up costs or Revenue Canada audits." Start-up costs were defined as relating specifically to the year "in which the reporting entity first applied for tax credits under the SR&ED program."

Annual Compliance Costs

Annual compliance costs were considered to be the costs covered by the following survey questions:

Q9:	Determination of SR&ED eligibility and tracking, and technical documentation of eligible projects.
Q10:	Project descriptions for Revenue Canada form T661.
Q11:	Tracking SR&ED current costs such as salaries and materials.
Q13/14:	If using proxy method, compilation of additional cost information. If not using proxy method, tracking and allocation of certain overheads and other pooled-type costs.
Q15:	Tracking cost of equipment used all or substantially all for SR&ED projects.
Q16:	Tracking "part use" capital equipment and determining the amount eligible for credit.
Q17:	Completing forms in support of the T2 return, e.g. form T661.
Q18:	Tax planning for SR&ED credits.
Q19:	Any other typical annual costs.

Respondents were asked to report the number of hours in the year that technical and accounting employees spent on these nine tasks. As discussed above, costs in dollars were obtained by multiplying these figures by the average hourly cost of such employees.

- The median average hourly costs of technical and accounting employees were $45 and $35 respectively.

These figures are not simply wage rates since respondents were instructed to include benefits and incremental overhead costs.[19] The total compliance cost for each task is the sum of the dollar cost of technical employees, the dollar cost of accounting employees and the amount paid to consultants.

Table 2
Characteristics of Annual SR&ED Tax Credit Compliance Tasks

	Q9	Q10	Q11	Q13 Q14	Q15	Q16	Q17	Q18	Q19
Mean % of costs of technical employees in total costs (excluding consultants)[a]	74	75	41	18	26	37	15	10	17
Mean % of total costs relating to consultants	7	13	6	15	5	8	31	36	10

[a] The percentages for accounting employees can be found by subtracting the numbers from 100.

- Approximately one half (51.2 percent) of the annual compliance costs of all the firms combined originated with the tasks generated by technical employees. The balance of costs were about equally distributed between accounting employees and outside consultants (24.4 percent and 24.5 percent respectively).

The questionnaire did not distinguish between outside consultants performing the technical tasks and outside consultants assembling the financial information, since it was felt that, in most cases, a single consultant might do both tasks and it would be difficult to break down the fees. In any event, this information would unlikely be available to the respondent. However, if we assume that the division between technical and accounting employees is roughly the same for consultants as it is for the firms'own employees on each of the nine tasks, approximately two thirds of total compliance costs would relate to technical employees, and the remaining one third would relate to accounting employees.

As shown in Table 2, there is a fairly clear division of tasks between technical and accounting employees.

- Technical employees are reponsible for about three quarters of the costs (excluding costs of consultants) relating to determining SR&ED eligibility and technical documentation (Q9), and writing project descriptions (Q10). Accounting employees form the majority of costs for all other annual compliance tasks (Q11 to Q19).

- Table 2 shows that consultants are being used for all the different annual compliance tasks, although there are more resources devoted to hiring consultants in the more accounting-oriented tasks such as tax planning (Q18) and fewer resources devoted to consultants in technical tasks such as determining SR&ED eligibility (Q9).

Table 3 shows that about two thirds of the costs of all firms in the sample relate to three tasks:

- determining SR&ED eligibility and technical documentation;

- preparing project descriptions; and
- tracking SR&ED current costs.

There are some significant differences in how the compliance costs of different types of firms are allocated among the nine tasks.

- Firms with SR&ED credits of less than $200,000, which are shown below to have relatively high total annual compliance costs, had an unusually high proportion of their costs in two areas:

  - the tracking of SR&ED current costs (Q11), which accounted for 26 percent of these firms' costs and 17 percent of other firms' costs; and
  - the completion of forms relating to the T2 return other than the project descriptions in the T661 (Q17), which made up13 percent of the costs of firms with claims under $200,000, 15 percent of the costs of firms in the $200,000 to $1 million category, and 5 percent of the costs of firms with an SR&ED claim of over $1 million.

Possibly, filling out forms is a fixed cost which does not vary very much with the size of the credits claimed.

Table 3
Mean Annual Compliance Cost for SR&ED Tax Credit, by Task (Percent)

	Q9	Q10	Q11	Q13 Q14	Q15	Q16	Q17	Q18	Q19	Total
	(Number of Companies)									
All firms	19	27	19	7	5	1	11	8	3	100 (51)
SR&ED Claim										
<$200K	19	26	26	7	4	0	13	5	0	100 (11)
$200K - $1M	12	28	19	8	4	1	15	12	2	100 (23)
$1M - $10M	30	25	17	8	4	0	7	4	3	100 (9)
>$10M	26	33	12	8	7	4	2	5	2	100 (7)
Annual Compliance Cost										
<$10K	13	26	15	8	5	0	18	8	5	100 (18)
$10K-$25K	16	24	26	8	4	1	11	11	0	100 (14)
$25K-$100K	19	37	21	7	4	1	6	5	1	100 (13)
>$100K	43	19	8	6	8	4	2	6	4	100 (6)

Different reasons seem to explain the high compliance costs esperienced by some larger firms. Consider the six firms in our sample which reported annual compliance costs of over $100,000. As Table 3 shows, the key difference between these firms and other firms is the proportion

of their costs relating to the determination of eligible projects and the technical documentation of these projects (Q9).

- A full 43 percent of these firms' costs related to determination and documentation compared to an average of 16 percent for other firms.

Tracking of part-use equipment was another source of difference between these firms and others.

- Tracking this element represented an average of 4 percent of the total costs for these firms but only 1 percent or less for the other three compliance-cost size categories.

One might hypothesize that these firms' large annual compliance costs are due to hiring consultants who promise to identify SR&ED-creditable costs in return for a large percentage (e.g., 50 percent) of the credit.

- The proportion of these firms' annual compliance costs which consists of payments to consultants was only slightly larger than in other firms (24 percent versus 22 percent).

Aggregate Annual Compliance Costs

- The aggregate annual compliance cost for all 51 firms in the sample was about $2.5 million.

Although the sample may not be statistically representative, this figure does give some indication of the total compliance costs of the SR&ED program since, as noted above, the firms in the sample comprise about 30 percent of total SR&ED claims for all firms in Canada.

- Expressing this $2.5 million as a percentage of aggregate SR&ED claims for the sample of $340 million, we estimate annual compliance costs to be 0.7 percent of SR&ED credits claimed.

Compliance costs would be even lower if one added the incentives available in many of the provinces to the denominator of the compliance cost percentage given above. (These incentives require relatively small additional compliance costs after federal compliance.)[20] Although there is no absolute standard against which to compare compliance costs, these figures suggest a surprisingly low annual compliance cost for the SR&ED program, given its reputation as requiring extensive scientific and accounting justification.

Aggregate compliance costs across the sample conceal significant variation among firms. Consider the range of compliance costs and credits in the sample, which is from just over $2,000 to over $680,000.

- The amounts of SR&ED credits claimed range from under $10,000 to over $100 million. Compliance costs as a percentage of SR&ED credits claimed vary from 0.1 percent to 164 percent.

Some insight into the data is provided when annual compliance costs are separated into four categories according to the size of the SR&ED claim as shown in Table 4.

- As one might expect, annual compliance costs increase with the amount of SR&ED credits claimed. Table 4 shows that costs rise across the four size categories from about $12,000, to $15,000, to $50,000 and, finally, to $219,000.

- As the claim size increases, the increase in costs is less proportional. For the lowest category (companies with an SR&ED claim of less than $200,000 on their most recent tax return), annual compliance costs are, on average, almost 30 percent of credits claimed. For the next largest category (SR&ED credits between $200,000 and $1 million), annual compliance costs fall sharply to an average of 4.3 percent of credits claimed. As SR&ED credits rise to between $1 million and $10 million, compliance costs fall to an average of 2.8 percent of credits claimed. For the largest firms in our sample, (over $10 million in SR&ED claims), annual compliance costs are, on average, just 0.9 percent of credits claimed.

Table 4
Annual Compliance Cost as a Percentage of SR&ED Credits Claimed, by SR&ED Claim Size

	Number of Companies	Mean Annual Compliance Cost ($)	Mean SR&ED Credit Claim ($)	Cost as a % of Claim		
				Mean	Weighted Mean[a]	Median
<$200K	11	12,217	67,156	29.5%	18.2%	14.6%
$200K-$1M	23	16,372	450,626	4.3%	3.6%	2.9%
$1-10M	9	50,376	3,281,558	2.8%	1.5%	2.1%
>$10M	7	219,160	45,099,742	0.9%	0.5%	0.7%
All firms[b]	50	49,132	7,126,707	9.1%	0.7%	2.8%

[a] For an example of the calculation of the weighted mean, consider the first line of the table: mean annual compliance costs of $12, 217 divided by the mean SR&ED claim of $67,156 yields 18.2 percent.
Since extreme values can influence the mean, it is helpful to examine the median.

[b] One firm is not included in the size classification because it did not provide the amount of its SR&ED credits.

- Even within these claim-size categories, there is a clear tendency for annual compliance costs to be a lower percentage of SR&ED claims as one nears the top end of the category. This is reflected in the weighted means shown in Table 4. When the mean across firms within a size category is calculated using the amounts of SR&ED credits as weights, the mean is significantly reduced. For example, in the largest size category, the average compliance costs of 0.9 percent became 0.5 percent when using a weighted average.

- The median for the different claim size groups falls uniformly as the credit size increases, just as the mean does. The influence of extreme values is well illustrated in the smallest size group: the median is only one half the mean value (14.6 percent v. 29.5 percent).

Although compliance costs of less than one percent of credits claimed may be expected to give policy makers and SR&ED claimants some satisfaction, annual compliance costs of 15 to 30 percent of claims for the smallest size category are troubling. The reasons for this are not clear. One hypothesis is that firms with large SR&ED claims have an advantage because they can get Revenue Canada approval for their top-level framework and avoid providing detailed justifications of individual projects. Firms with smaller claims may have a wider diversity of projects and therefore cannot achieve these economies. If this is true, firms with larger claims should have a lower percentage of their costs on the technically oriented questions of the survey (Q9 and Q10). However, as Table 3 indicates, if anything, the reverse is true.

- As noted above, the principal claim-size-related differences in costs are that, with SR&ED credits of less than $200,000, an unusually high proportion of costs involve tracking SR&ED current costs and completing forms relating to the T2 return (not including project descriptions required for the T661).

- Small-claim firms could have high compliance costs because they are employing consultants who charge high fees for filing SR&ED claims. However, the percentage of compliance costs relating to consultants bears no obvious relationship to claim size. In firms with claims under $200,000, about 17 percent of costs relate to consultants, but the figure is much higher in firms with claims between $200,000 and $1 million: 30 percent. For the $1 million to $10 million and over $10 million categories, the percentages are 5 percent and 22 percent respectively.[21]

  Other factors may also contribute to the variation in annual compliance costs across firms.

- Revenue Canada treats firms claiming refundable credits somewhat differently. Refundable credits are cash payments, and Revenue Canada will not make cash payments without some evidence of a valid claim. Consequently, “firm status” (whether the firm is eligible for the 35 percent refundable SR&ED tax credit, Canadian-controlled but not eligible for the refundable credit or foreign-controlled) may be a relevant variable. Claims for refundable credits are generally audited more quickly than other SR&ED credit claims.[22]

  Table 5 analyzes total annual compliance costs as they relate to firm status.

- Firms eligible for the refundable credit had costs averaging 17 percent of SR&ED credits, while other firms had much lower costs — 2.8 percent for other Canadian-controlled firms and 5.6 percent for foreign-controlled firms.

The differences reported in Table 5 may be simply a result of the different average SR&ED claim sizes. Refundable-credit firms in the sample have an average of about $400,000 in credits, while foreign-controlled and other Canadian-controlled firms in the sample have an average of $7 million and $16 million in credits respectively.

A traditional finding in the compliance cost literature is that small businesses bear a disproportionate share of compliance costs.[23] Table 6 shows the firm size effect, using the number of employees as a measure of firm size.

- The annual compliance costs for larger firms are a lower percentage of the claim size.

The difficulty with this finding is that larger firms also tend to have larger SR&ED claims, so it is not clear which is the determining variable.

Table 5
Annual Compliance Cost as a Percentage of SR&ED Credits Claimed, by Firm Status

Firm	Number of Companies	Mean Annual Compliance Cost ($)	Mean SR&ED Credit Claim ($)	Cost as a % of Claim	
				Mean	Weighted Mean
Refundable credit	21	22,033	407,971	16.6%	5.4%
Other Canadian-Controlled	16	72,710	15,609,723	2.8%	0.5%
Foreign-Controlled	14	62,835	7,030,024	5.6%	0.9%

Table 6
Annual Compliance Cost as a Percentage of SR&ED Credits Claimed, by Number of Employees

Number of Employees	Number of Companies	Mean Annual Compliance Cost ($)	Mean SR&ED Credit Claim ($)	Cost as a % of Claim	
				Mean	Weighted Mean
<100	19	19,595	381,908	7.2%	5.1%
100 to 1,000	13	17,771	581,862	5.6%	3.1%
>1,000	13	126,900	25,413,945	2.1%	0.5%

To resolve the relative contributions of claim size, firm status and firm size, a multiple regression analysis was performed in order to examine the contribution of particular factors while statistically controlling for the contribution of other factors. (The results of this analysis, are reported in Appendix C.)

- The regression analysis indicates that claim size is the determining variable. Neither firm size nor firm status make a significant independent contribution to explaining the variation in compliance costs across firms.

The regression analysis also yields an estimate of the quantitative relationship between annual compliance cost and claim size.

- A doubling of claim size causes annual compliance costs to increase by 44 percent.

This non-linear relationship explains why firms with small claims have annual compliance costs which are relatively high in proportion to claim size.

Start-Up Costs

Respondents were asked about the costs of learning about and designing systems for the tax credit program when they first started to use it. Not all respondents could complete this section, either because they had been continuously claiming tax credits since before 1986[24] or the individuals completing the survey did not have access to information about start-up costs in an earlier year. Thirty-three respondents were able to provide start-up information.

- Average start-up costs for the 33 firms with a start-up year were $32,556. Since the annual compliance cost for this group of firms averaged $38,720, start-up costs were almost as large (84 percent) as annual compliance costs. In effect, a firm has a "double year" of compliance costs in its start-up year — one year of start-up costs and an almost equal amount of annual compliance costs. However, start-up costs are still only 0.4 percent of total SR&ED credits claimed for these firms in the latest year.

- Of the start-up costs, 77 percent were attributable to learning about the SR&ED tax credit program and to staff training. The remaining 23 percent were attributable to the cost of setting up new forms and systems to capture the necessary information.

Start-up costs bear disproportionately on smaller firm, but not to the same extent as annual compliance costs.

- The median values of the percentage of start-up costs to SR&ED claim are:
  - 3.5 percent for claims under $200,000;
  - 1.8 percent for claims between $200,000 and $1 million;
  - 1.15 percent for claims between $1 million and $10 million; and
  - 0.6 percent for claims over $10 million.

Anecdotal evidence suggests that there might be benefits in compliance with the SR&ED tax credit program, such as better management and tracking of R&D activities.

- Thirty-one percent of respondents (16 firms) answered yes when asked if the costs of the start-up activities for the SR&ED tax credit program had any benefits in terms of the effectiveness of managing the R&D function.

For those who indicated they had received such benefits, we also asked them to report what percentage of the total costs would have been incurred if only those additional benefits had been achieved (i.e. if they not also had to comply with the SR&ED tax credit program).

- Two thirds of these respondents reported that 20 to 25 percent of the time they would have achieved only the management benefits, while the rest reported a higher percentage.

It is interesting to note that the percentage of the start-up costs that related to payments to outside consultants was about twice as high as for the annual compliance costs.

- Approximately half of the start-up costs represented payments to outside consultants, while only about one quarter of the annual compliance costs represented payments to outside consultants.

This suggests that companies may have gone to consultants to help them get started in the program, but that these consultants became relatively less necessary once the firms had experience with the program.

Revenue Canada Audit Costs

Respondents were asked to report on the status of their R&D tax credit claims since 1986. Had they been audited? Had the audit been completed? Had they proceeded to a notice of objection, etc?

- A very high proportion of respondents reported that they had undergone or were likely to undergo a technical or Revenue Canada cost audit of their SR&ED tax credit claim in each of the years reported. (See Table 7.)

Note that Table 7 gives the percentages of respondents who were able to answer that an audit had or had not occurred or was likely to occur (for example, they knew it was about to start) in any given year. Respondents who did not know whether or not an audit was or would be conducted for a particular year are not included in the statistics.

- On average, survey companies had undergone two or three separate R&D tax credit audits since 1986, some of which may have related to multiple years.

Note that the audit percentages appear to be dropping in recent years; perhaps firms with a good track record with Revenue Canada from having relatively minor changes in the past are no longer being audited with the same frequency.

Respondents were then asked about the costs of complying with their most recent SR&ED tax credit audit.

Table 7
Percentage of Survey Companies Undergoing Revenue Canada Audit

Year	% Technical Audit	% Financial Audit
1986	88	96
1987	80	93
1988	85	97
1989	85	97
1990	84	84
1991	92	79
1992	74	76
1993	73	84

- Average audit costs for each audited year were $6,458. This represents 12.5 percent of annual compliance costs and 0.1 percent of average SR&ED claims for this group of firms. Consequently, audit costs are much smaller than annual compliance costs.

This is quite important in keeping the compliance costs of the SR&ED program low, since it is evident from Table 7 that the audit percentage approaches 100 percent. Clearly, the SR&ED program is like no other part of the Canadian tax system in terms of its audit rate.

- Audit costs are slightly more important for smaller firms, but this relationship is not strong. The median values of the percentage of audit costs to SR&ED claim are:
  - 1.0 percent for claims under $200,000;
  - 0.4 percent for claims between $200,000 and $1 million;
  - 0.2 percent for claims between $1 million and $10 million; and
  - 0.02 percent for claims over $10 million.

- The mean reported cost of an audit is only a fraction of the mean annual compliance cost of the tax credit program.

This is in spite of anecdotal indications and written comments to the contrary in responses to the final survey question that SR&ED tax credit audits are very onerous for taxpayers, and may be because a number of different employees participate in the annual tax credit filing, whereas only one or two individuals may deal with the Revenue Canada audit. Any dissatisfaction with the audits may be attributable to their frequency (as discussed earlier), their adversarial nature or the perception that they are a waste of the respondent's time.

Respondents were also asked about the results of their most recent SR&ED tax credit audit.

- Following the Revenue Canada audit, survey companies were, on average, allowed 90 percent of the tax credits they had originally claimed. The firms with the smallest SR&ED claims did substantially better. They were allowed an average of 98 percent of the original claim.

- The most frequent reason given for the disallowance of any tax credits was that costs were found to be ineligible (reported by 43 percent of respondents). Seventeen percent of respondents indicated that tax credits were disallowed because they had ineligible projects, and 26 percent gave both of these reasons.

The finding that ineligible costs are more common than ineligible projects may be evidence of progress made over the years in defining the inherently subjective concept of R&D. On the other hand, disputes over ineligible costs are common but relatively small in value, e.g. disputes about whether training costs are eligible or too high a proportion of the cost of shared-use equipment has been allocated to SR&ED. In contrast, a Revenue Canada opinion that a project is not SR&ED could cut out 100 percent of the project's costs from the credit.

Respondents were also asked about any SR&ED tax credit claims that had gone beyond the audit stage to a notice of objection or further.

- Only 11 respondents reported pursuing a tax credit claim past the audit stage and, not surprisingly, the cost of the exercise varied widely.

Total Compliance Costs

Annual compliance costs, start-up costs and audit costs have not been added together to develop an aggregate measure of compliance costs because the latter two costs are much less important and, for several reasons, a sum of the three costs may not be meaningful. First, it is difficult to compare start-up costs to annual compliance costs and audit costs because start-up costs occur only once while annual compliance costs and audit costs (as discussed below) occur every year. In economic terms, start-up costs are a "stock" and annual compliance costs are a "flow." Second, audit costs are expected to vary significantly from year to year, and the year of the last audit may not have been a "typical" year. Third, the sample size would be quite small because the initial sample is small, and many firms either did not provide start-up information or did not provide audit information.

Qualitative Assessments

Respondents were asked to rate the compliance costs of the SR&ED tax credit program, relative to the benefits received, on a scale of 1 to 5 where 1 is low, 3 is acceptable and 5 is high.

- Most respondents rated costs to benefits as acceptable (43 percent). Sixteen percent thought compliance costs were low, while another 12 percent viewed these costs as being between low and acceptable. Therefore, almost three quarters (73 percent) of respondents regarded

compliance-cost levels as acceptable or better. The remainder viewed compliance costs as either high (14 percent) or between acceptable and high (12 percent).

An attempt was made to use a multiple regression analysis to determine statistically the factors which might explain respondents' views. The only significant factor was eligibility for refundable credits.

- Eligible companies in the survey rated compliance costs about three quarters of a point lower than did companies which were not eligible for the credits. Apparently, firms receiving tax credit cash payments perceived the benefits more positively and therefore rated the cost/benefit lower. In any event, a great deal of variation associated with this factor remains unexplained.

5. SURVEY RESULTS: R&D GRANTS

Compliance Costs

- About one half (25) of the respondents reported receiving R&D grants from the government.

Since R&D grant programs vary greatly in how much assistance they provide and how much planning detail is required for a proposal, respondents were instructed to select one particular grant for analysis. For approximately one third, this was an Industrial Research Assistance Program (IRAP) grant, and for another one third, it was a Defence Industries Productivity Program (DIPP) grant. The balance of respondents selected one of a variety of government grants.

- On average, 41 percent of project costs were covered by the grant. All the grant recipients claimed SR&ED tax credits on the balance of the R&D cost.

The grant recipients were asked to estimate the compliance cost of dealing with the grant programs using similar measurement criteria to the SR&ED compliance cost calculation.[25]

- On average, respondents reported success in getting about 66 percent of the grants they apply for.

- The mean cost of learning about eligible grants across all survey companies was $3,369. Sixty percent of this cost was incurred by technical employees.

These figures may not be representative of unsuccessful grant applicants since our sample selection procedure was skewed toward successful applicants in order to have a suitable sample size to analyze the compliance costs associated with administering grants.

- Almost three quarters (72 percent) of the compliance costs of the grant was attributable to the proposal and application stage. A further 23 percent of costs related to tracking expenditures, providing reports, negotiating the direction of research, etc. Four percent of costs related to audit by the granting agency, while “other” costs accounted for 1 percent.

- Approximately one quarter of the costs related to companies’ accounting employees, with the balance split between technical employees and outside consultants (39 percent and 34 percent respectively).

Of the 25 firms receiving grants, 22 supplied detailed compliance cost data.

- For these 22 firms, compliance costs were 2 percent of the total grants received.

Table 8
Annual Compliance Cost of R&D Grant as a Percentage of Grant Received, by SR&ED Claim Size

	Number of Companies	Mean Annual Compliance Cost ($)	Mean Grant Size ($)	Cost as a % of Grant	
				Mean	Weighted Mean
< $1 million	16	21,087	622,377	9.6%	3.4%
> $1 million	6	23,332	2,377,875	0.8%	1.0%
All firms	22	21,700	1,101,149	7.2%	2.0%

- The compliance costs of SR&ED credits of these 22 firms were slightly higher (2.2 percent).

There are several reasons why one must be cautious about drawing the conclusion that grants imply less compliance costs than SR&ED tax credits. First, the focus of data is on the compliance costs of grants awarded to the firms in the sample. Since 72 percent of the compliance costs were associated with the proposal or application stage, the compliance costs would be much higher if we included the compliance costs of the unsuccessful applicants. Second, the 22 firms for which we have grant compliance cost data are not among the firms with the lowest SR&ED tax credit compliance costs. Perhaps the firms that are applying for grants are self-selected to be firms for which obtaining SR&ED tax credits is relatively costly.

Table 8 shows how the compliance costs of grants vary with the size of the firm's most recent SR&ED claim. The percentage is substantially higher for firms with smaller claims.

- Weighting by grant size, firms with SR&ED claims of less than $1 million had compliance costs of 3.4 percent; for firms with larger SR&ED claims, the compliance costs was 1,0 percent.

Qualitative Assessments

Survey companies that had received R&D grants were asked to assess the compliance costs of those grants, relative to the benefits received, on a scale of 1 to 5 where again, 1 is low, 3 is acceptable and 5 is high.

- A little less than half (47 percent) of the firms considered compliance costs relative to benefits as acceptable. No firm thought the costs of grants were low, and only 6 percent viewed them as being between low and acceptable. Therefore, only 53 percent viewed the costs of grants as acceptable or low, compared to 73 percent for SR&ED credits.

6. CONCLUSIONS

The main finding of this study is that, despite the reputedly extensive financial and technical record keeping required to support an SR&ED claim, the compliance costs of SR&ED credits appear relatively low in aggregate — 0.7 percent of the credits claimed by the sample as a whole. Thus, it appears that the SR&ED program is cost-efficient in delivering support to research and development in Canada, at least with respect to costs incurred by the private sector and at least for this sample.

The sample is unavoidably non-random and, hence, one must be cautious about generalizing to the population. It also excludes certain industry sectors because of its limited geographic scope. The negative impact of the sampling deficiencies is, in part, reduced by the relatively large proportion of total claimants (measured by dollar value) surveyed: total credits claimed by firms in the sample represent about 30 percent of all claims across Canada.

One troubling finding is that the compliance costs are substantially higher in firms with small R&D programs as compared to firms with larger R&D efforts. While the average compliance cost of SR&ED claims is less than 1 percent of the claim, firms with claims under $200,000 have compliance costs in the area of 15 percent or more. It should be noted that the methodological problems of our study likely impact this segment of the sample most severely, and real caution should be used in extrapolating these particular findings to the entire population.

The study did provide some information about what parts of compliance with the SR&ED program imposed the greatest costs. For example, it would appear that tracking current costs and completing forms are something of a fixed cost and, in proportion, represent a greater burden to the smaller firms. Start-up costs approximate (or are slightly lower than) the annual compliance costs. Although these start-up costs are not, in themselves, great, firms nonetheless face a double compliance burden in the first year of the program. Again, the burden is felt disproportionately by the smaller firms (with the same caveats as outlined above).

Consultants seem to be important in the start-up phase and become less signifigant in terms of compliance costs over time. There was some anecdotal evidence of benefits accruing to overall management practices as a result of the introduction of the SR&ED program although only a small number of respondents reported such benefits, and there are obvious risks in generalizing from these results.

Participants in the SR&ED program frequently complain about the “burden” of audits. (In the focus groups, this was a recurring theme.) The reported audit compliance costs were, however, significantly lower than the annual compliance costs. It is possible that complaints are more a reflection of the frequency and length of the audit process than of the actual compliance cost. In general, a high proportion of tax credits are allowed on audits, which suggests that there is no evidence of the debacle of the earlier R&D tax program.

Comparisons of SR&ED tax credits compliance costs to the compliance costs of R&D grant programs provided ambiguous conclusions. Although the compliance costs of grants were lower for firms which were in receipt of both grants and credits, the larger firms in our sample (which generally

have very low SR&ED compliance costs) were not in receiving grants. Also, the costs of unsuccessful grant proposals were not included in the compliance cost, which is important since most of the costs are incurred at the proposal or application stage. The compliance costs showed an obvious size effect: firms with small R&D efforts appeared to have a disproportionately high compliance costs when compared with firms with larger R&D programs.

Opinions about compliance costs are obviously of mixed value, even without the methodological difficulties of the study. Often they reflect what respondents think of the program rather than their assessments of the relative appropriateness of the actual costs. Nevertheless, it was interesting to note that the majority of companies appeared to find the compliance costs of the SR&ED program to be acceptable and, of those who also participated in a grant program, more were favourably disposed to the relative compliance costs of the SR&ED tax credit program than the grant program.

A follow-up study would be useful to determine whether respondents reporting very high compliance costs relative to other respondents have characteristics in common with the other respondents, which could range from poor R&D project management systems to high reliance on outside consultants to prepare claims. Respondents reporting relatively low compliance costs could be studied to understand how they have achieved these cost savings. It would also be interesting to be able to compare Revenue Canada's SR&ED tax credit compliance costs to those reported by respondents, to see whether those reporting high compliance costs also cost Revenue Canada higher-than-average amounts in terms of departmental hours spent and outside consultants used.

ENDNOTES

1 Couzin, Robert, "The Process of Simplification," *Canadian Tax Journal* (May-June 1994), p. 489: "A tax measure may generally be said to enhance tax simplification if it facilitates compliance." Simplification also includes keeping the administrative costs of the government to a minimum.

2 Smith, Adam, *An Inquiry into the Nature and Causes of the Wealth of Nations*, ed. by E. Cannan, Vol. 2 (London: Methuen University Paperbacks, 1961) at 351.

3 Vaillancourt, François, *The Administrative and Compliance Costs of the Personal Income Tax and Payroll Tax System in Canada, 1986* (Toronto: Canadian Tax Foundation, 1989). See also François Vaillancourt, "The Compliance Costs of Sales Taxes in Canada: Evidence from the Eighties, Prospects for the Nineties," *Symposium on the Simplification of the Federal Provincial Sales Tax System* (Toronto: Canadian Tax Foundation, 1993).

4 Plamondon & Associates Inc., *GST Compliance Costs for Small Business in Canada: A Study for the Department of Finance Tax Policy* (Plamondon & Associates, 1993).

5 Recent compliance cost studies in other countries include: Blumenthal, Marsha and Joel Slemrod, "The Compliance Cost of Taxing Foreign-Source Income: Its Magnitude, Determinants, and Policy Implications," draft paper presented at the March 22, 1994 international tax policy conference, "National Tax Policy in an International Economy"; Pope, Jeff, Richard Fayle and Dong-ling Chen, *The Compliance Costs of Public Companies Income Taxation in Australia, 1986-7* (Sydney: Australian Tax Research Foundation, 1991); Sandford, Cedric, Michael Godwin and Peter Hardwick, *Administrative and Compliance Costs of Taxation* (Bath, UK: Fiscal Publications, 1989); Slemrod, Joel and Marsha Blumenthal, *The Income Tax Compliance Cost of Big Business* (Washington, DC: Tax Foundation, 1993); and Allers, M., *Administrative and Compliance Costs of Taxation and Public Transfers in the Netherlands* (Groningen, 1994).

6 Bird, Richard, "The Costs of Collecting Taxes: Preliminary Reflections on the Uses and Limits of Cost Studies," *Canadian Tax Journal* (November-December 1982), 860-865, at 865.

7 Some limited empirical evidence of this assertion is available regarding the compliance cost of zero rating under value-added taxes. See Cnossen, Sijbren, "Administrative and Compliance Costs of the VAT: A Review of the Evidence," *Tax Notes International* (June 20, 1994).

8 On backstopping rules, see the discussion of the taxation of transborder flights under the GST in Bird, Richard, "The Cost and Complexity of Canada's VAT: The GST in an International Perspective," *Tax Notes International* (January 3, 1994).

9 For a detailed description of SR&ED incentives, see Murray, Kenneth J., *Strategies to Stretch Your R&D Dollar* (Toronto, CCH Canadian, 1993).

10 Warda, Jacek, *Canadian R&D Tax Treatment: An International Comparison* (The Conference Board of Canada, 1994), Report 125-94.

11 Provincial SR&ED incentives, such as the Ontario superallowance, are not included in this study. However, since these incentives rely almost exclusively on numbers which are needed for compliance with federal SR&ED incentives, we expect they produce little additional compliance costs.

12 SR&ED tax incentives represent 24 percent of federal government R&D spending and grants approximately 17 percent. The remainder is divided between universities (21 percent) and government labs (38 percent). See Hamilton, Robert, "Tax Incentives and Innovation: The Canadian Treatment of R&D," *Canada-United States Law Journal*, Vol. 19 (1993) pp. 233-257, at 240.

13 For a survey of the factors affecting this choice, see Kesselman, Jonathan, "Direct Expenditures versus Tax Expenditures for Economic and Social Policy," in Neil Bruce (ed.), *The Seventh John Deutsch Roundtable on Economic Policy: Tax Expenditures and Government Policy* (Kingston, Ont.: John Deutsch Institute, 1988), pp. 283-323. In that same volume, Jog, Vijay and Jack Mintz ("Business Tax Expenditure Accounts: Their Purpose and Measurement," pp. 181-225) suggest that this type of relative cost information should also be provided as part of tax expenditure accounts.

14 For data on the number of SR&ED claimants, see *Report of the Auditor-General of Canada to the House of Commons: Fiscal Year Ended March 31, 1994*, chapter 32 ("Department of Finance and Revenue Canada: Income Tax Incentives for Research and Development").

15 One method of circumventing this problem would be to search data bases of financial statements for publicly traded firms which list R&D expenses. This appears to be the way the list entitled "Research on a Roll: The R&D Top 100," *Report on Business Magazine* (September, 1994), p. 85 was prepared. However, this method would exclude corporations which are eligible for refundable SR&ED tax credits. It would also exclude large firms which have R&D efforts but which also have other operations, since such firms often lump R&D expenses in with general and administrative expenses on their financial statements.

16 Most of these head offices were located in Southern Ontario. Focus groups were held in Mississauga, Ottawa, Toronto and Kitchener.

17 See Goodchild, Gerry and Morley Lipsett, "Patterns of R&D Claims in Canada," paper presented at the Conference on Government Recipes for Industrial Innovation, Vancouver, B.C., October 20-21, 1994. A large portion of these amounts cannot be used to reduce tax payable in the current year and is instead carried forward or back. In aggregate, the amount actually used to reduce tax payable in 1991 was $543 million. See Department of Finance Canada, *Government of Canada Tax Expenditures* (December, 1994), p. 26.

18 Since many of the companies involved are not publicly traded, it is impossible to compare the size or other characteristics of firms responding to the survey to the firms which declined participation.

19 Accordingly, they cannot readily be validated from any external source such as census data.

20 Unfortunately, there is insufficient data to calculate the provincial incentives for the sample firms — the location of the R&D is not known, and the Ontario superallowance requires information on past years' SR&ED activity.

21 Another possibility is that some small firms are including start-up costs in their responses to the annual compliance cost questions (Q9 to Q19). However, this seems unlikely in light of the definition of annual compliance costs provided in the questionnaire (as described above).

22 See Shultis, Roy, "Revenue Canada's Administration of R&D Tax Incentives: Overview of Current Administrative Practices," *1992 Conference Report* (Canadian Tax Foundation, 1993).

23 In particular, see the studies by Pope et al. and Sandford et al. cited in footnote 5 above.

24 Note that in 1986 major changes were made to the SR&ED program. For the purposes of this study 1986 was therefore taken to be the first year of the "new" SR&ED program, and no data were sought for prior years. Start-up costs were not adjusted for inflation since, for most firms, the start-up year was quite recent.

25 Insofar as applying for a grant is a voluntary choice, these costs may not be considered "compliance costs." However, applying for an SR&ED tax credit is equally a voluntary choice — subsection 127(5) of the *Income Tax Act* permits a taxpayer to claim SR&ED credits and other investment tax credits but does not require it.

APPENDIX A

Questionnaire Developed by Ernst & Young for the

SR&ED Tax Credit
Compliance Cost Study

Individual _____

Company Name _____

ID Number _____

April, 1994

NO. _____

"Thank you for attending our Focus Group. We trust any questions or concerns you may have had have been answered. Before you begin answering the questionnaire, we would like to remind you of the following:

1. Due to the nature of the **Access to Information Act** ("the Act"), Industry Canada cannot guarantee confidentiality unless it is protected by the Act. Any information collected which would qualify for protection under section 20 of **the Act** will be treated in a confidential manner. Specifically, Industry Canada and all researchers ("the contractors") for this study, have agreed to protect the confidentiality of your sensitive business information by agreeing:

   (i) to discuss the commercial confidentiality of the information the contractors wish to obtain with you, the respondent, to determine which information is considered sensitive business information by your company, and which is not;

   (ii) to discuss how the sensitive business information identified by you on behalf of your company is to be used in the report that follows from this study;

   (iii) that, at the completion of the project and prior to receipt of final payment, all notes and material related to the project will be turned over to Industry Canada for retention in their files rather than the contractors.

   We will be discussing these issues with you at the Focus Groups to confirm your understanding of them and agreement to their terms.

2. We would like to give you some additional assurance about confidentiality within the scope of the project itself. So far as we, the researchers are concerned (and subject to the provisions of **the Act** described above), your answers will be kept in total confidence. The Identification Number on the questionnaire is solely for administrative purposes. The person who can tie the number to your name will not be the same person who inputs data, nor one of the primary researchers who analyses the data. The identity of respondents will be disguised in the final report.

3. It is entirely possible that, even after the Focus Session, you still find some questions to be difficult to answer. A high response rate is obviously important to the success of this study, so, if you have any questions, please feel free to contact Eve Gianinni (416) 943-3518 for clarification.

Thank you again for your assistance."

Ernst & Young

NO. _____

1. Throughout this questionnaire, please ensure you consistently provide information for the same reporting entity (***the Reporting Entity*** **)**. Is that entity:

   a single corporation? ❑
   a consolidated group of corporations? ❑

2. Is the Reporting Entity:

   Canadian controlled? ❑
   foreign controlled ❑

3. Please refer to your most recently filed annual Federal Income Tax return. For the balance of this questionnaire the phrase "Reporting Period" refers to the fiscal year covered by this return.

   From time to time the Reporting Entity may claim tax credits for SR&ED projects where work was conducted in part or in whole by **arms-length third parties**. Estimate (***approximate answers are adequate***) for the Reporting Period, the proportion of SR&ED costs on which the Reporting Entity claimed tax credits that consisted of payments to arms length third parties to conduct SR&ED on behalf of the Reporting Entity:

   _____%

4. There are two levels of SR&ED tax credits. In the Reporting Period, was the Reporting Entity eligible for:

   35 % refundable credit? ❑
   only the 20 % non-refundable credit? ❑

5. Some organizations incorporate SR&ED tax credits within the financial results of the division in which the R&D was conducted. Does the Reporting Entity follow this practice?

   Yes ❑
   No ❑
   Sometimes yes/sometimes no ❑
   Not applicable (***because, for example, there is no divisional structure***) ❑

6. Some corporations consider SR&ED tax credits when preparing R&D budgets and other plans, while the practice in other corporations is to consider SR&ED tax credits only when preparing documentation at the end of the Reporting Period.

   Does the Reporting Entity, in general, consider SR&ED tax credits in preparing R&D budgets?

   Yes ❑
   No ❑
   Sometimes yes/sometimes no ❑

7. In this questionnaire we are interested in the average hourly labour costs of two categories of employee of the Reporting Entity. Please include benefits and incremental overhead costs:

   (a) We define ***technical employees*** as people who have a technical background and who would participate in the process of ensuring compliance with the SR&ED tax credit program and/or a government R&D grant program. For example, this definition would include engineers, scientists, technicians, laboratory employees, plant supervisors, and technical writers.

NO. _____

What is the average hourly labour cost of a technical employee who would assist in compliance with the SR&ED tax credit program and/or a government R&D grant program?

$_____

(b) We define ***accounting employees*** as people who have accounting, managerial or clerical training and who would participate in the process of ensuring compliance with the SR&ED tax credit program and/or a government R&D grant program. For example, they may compile the cost figures required to complete Form T661.

What is the average hourly labour cost of an accounting employee who would assist in compliance with the SR&ED tax credit program and/or a government R&D grant program?

$_____

8. In the Reporting Period, please indicate:

(a) The total SR&ED tax credits claimed on the T2038 as filed (include all credits, whether they were refunded in cash, applied to reduce tax payable, carried back to a prior taxation year, or carried forward):

$_____

(b) Attached to the end of this questionnaire is a copy of the old Part 5 of Form T661. Please complete this form for the Reporting Entity. If such a form was already prepared for the Reporting Entity, feel free simply to attach a photocopy to your response. Note, however, that the data must be for the Reporting Entity as defined throughout this questionnaire.

NO. _____

ANNUAL COMPLIANCE COSTS

The following questions all relate to the cost of compliance with the SR&ED tax credit provisions. Please note the following guidelines when answering the questions:

(a) We will be using the terms "technical employee" and "accounting employee" throughout. The definition remains the same as in Question 9.

(b) The term "consultant" means any individual or entity other than an employee of the Reporting Entity who assisted in the particular task identified by the question.

(c) Throughout the section answer **ONLY** for the **Reporting Period (*to repeat the definition: the fiscal period covered in the most recently filed federal Income Tax return*)**.

(d) Fro many of the questions, your answers will inevitably be approximations. This is perfectly acceptable.

(e) Questions 9-19 are intended to capture costs that occur routinely every year. They are not intended to include costs caused by extraordinary events in the year such as Start-up costs or Revenue Canada audits. These costs are included in separate questions later in the questionnaire.

(f) Remember that our interest here is in the cost of compliance. We are therefore only interested in **incremental** costs. For example, you will have costs such as reporting to a parent, complying with grant program requirements, or routine financial reporting. We are interested in the costs incurred because of compliance with the SR&ED tax credit program, over and above these other costs.

9. At some time in the evolution of an R&D project an assessment must be made of whether it is eligible as an SR&ED tax credit project. If a project is eligible, further work is required for tracking and ongoing technical documentation of eligible projects. Estimate:

   (a) the number of hours spent by technical employees completing these tasks:

   # hours_____

   (b) the number of hours spent by accounting employees completing these tasks:

   # hours_____

   (c) the amount paid to outside consultants for completing these tasks:

   $_____

10. Assume now that a project has been categorized as an SR&ED tax credit project. Project descriptions must be completed on an annual basis to complete Form T661. Estimate, for **ALL** SR&ED tax credit projects in the Reporting Period:

   (a) the number of hours spent by technical employees completing this task:

   # hours_____

NO. _____

(b) the number of hours spent by accounting employees completing this task:

hours_____

(c) the amount paid to outside consultants for completing this task:

$_____

11. SR&ED current costs, such as salaries and materials, must be tracked. Note that in this question we are not interested in overhead and other pooled-type costs that are dealt with later. For the Reporting Period, estimate;

(a) the number of hours spent by technical employees, tracking current costs:

hours_____

(b) the number of hours spent by accounting employees, tracking current costs:

hours_____

(c) the amount paid to outside consultants, for tracking current costs:

$_____

12. In the Reporting Period, did you use the "proxy method" with SR&ED tax credit projects?

Yes ❑
No ❑

If your answer is **YES, please go to Question 14.**

13. If you did **NOT** use the "proxy method" you must, in addition to the tracking reported in Question 11 above, track and allocate certain overheads and other pooled-type costs to SR&ED tax credit projects. Estimate, for the Reporting Period:

(a) the number of hours spent by technical employees, allocating such costs:

hours_____

(b) the number of hours spent by accounting employees, allocating such costs:

hours_____

(c) the amount paid to outside consultants, for allocating such costs:

$_____

If you did **NOT** use the "proxy method," **please go to Question 15**.

14. The "proxy method" calculation requires the compilation of cost information, in addition to cost information compiled to track current SR&ED costs (Question 11 above). For example, it is necessary to track salary costs exclusive of benefits. Estimate, for the Reporting Period:

NO. _____

(a) the number of hours spent by technical employees compiling additional cost information:

hours_____

(b) the number of hours spent by accounting employees compiling additional cost information:

hours_____

(c) the amount paid to outside consultants for compiling additional information:

$_____

15. The cost of equipment used all or substantially all for SR&ED tax credit projects, must be tracked. Estimate, for the Reporting Period:

(a) the number of hours spent by technical employees, tracking such costs:

hours_____

(b) the number of hours spent by accounting employees, tracking such costs:

hours_____

(c) the amount paid to outside consultants, for tracking such costs:

$_____

16. If you claim investment tax credits on "part-use" capital equipment, or if you purchase equipment intending to make such a claim, you will incur costs tracking the use of the equipment and determining the amount eligible for credit. Estimate, for the Reporting Period:

(a) the number of hours spent by technical employees, tracking and calculating these costs:

hours_____

(b) the number of hours spent by accounting employees, tracking and calculating these costs:

hours_____

(c) the amount paid to outside consultants, for tracking and calculating these costs:

$_____

17. The SR&ED tax credit program calls for the completion of a number of additional forms in support of the T2; for example, Form T661, Form T2038, Adjustments to T2S(1), etc. For this question we are interested only in the task of actually completing these forms (gathering that information is captured elsewhere). Estimate, for the Reporting Period:

NO. _____

(a) the number of hours spent by technical employees, completing these forms:

hours_____

(b) the number of hours spent by accounting employees, completing these forms:

hours_____

(c) the amount paid to outside consultants, for completing these forms:

$_____

18. Tax planning may be required in order to optimize the benefit of the SR&ED tax credits. For example, in order to decide whether or not to use the "proxy method," certain calculations may be required. Estimate, for the Reporting Period:

(a) the number of hours spent by technical employees, in tax planning tasks:

hours_____

(b) the number of hours spent by accounting employees, in tax planning tasks:

hours_____

(c) the amount paid to outside consultants, for tax planning tasks:

$_____

19. We want to make sure that we have considered **ALL** typical annual costs related to the SR&ED tax credit program. Therefore, consider whether there are any activities which have **NOT** already been captured in Questions 9 through 18. If there are such activities:

(a) Describe the nature of these activities _____

_____

_____

(b) Estimate, for the Reporting period:

(i) the number of hours spent by technical employees, on these activities:

hours_____

(ii) the number of hours spent by accounting employees, on these activities:

hours_____

(iii) the amount paid to outside consultants, on these activities:

$_____

NO. _____

20. In the Reporting Period, you may have had some ***extraordinary*** costs associated with complying with the SR&ED tax credit program due to changes to the tax legislation. For example, there may be additional training costs. Estimate, for the Reporting period:

    (a) the number of hours spent by technical employees, in adjusting to changes in legislation:

    # hours_____

    (b) the number of hours spent by accounting employees, in adjusting to changes in legislation:

    # hours_____

    (c) the amount paid to outside consultants, in adjusting to changes in legislation:

    $_____

21. Questions 9 through 20 were designed to capture the total costs of complying with the SR&ED program for the Reporting Period. During this period you may have had some ***extraordinary*** events that were not caused by the SR&ED tax credit program itself but which, nonetheless, incurred additional costs. For example, there may have been changes in personnel within the Reporting Entity, or there may have been major changes to the computer system. **Please do not answer this question if the Reporting Period is the first year you claimed SR&ED tax credits**. Note that we are again only interested here in costs **OTHER THAN** start-up costs or costs associated with Revenue Canada audits:

    (a) Describe the nature of these costs: _____

    _____

    _____

    (b) Estimate, for the Reporting period:

    (i) the number of hours spent by technical employees, incurring these costs:

    # hours_____

    (ii) the number of hours spent by accounting employees, incurring these costs:

    # hours_____

    (iii) the amount paid to outside consultants, incurring these costs:

    $_____

NO. _____

START-UP COSTS

We are defining the "Start-up Year" very specifically. It refers to any year **ending AFTER** December 31, 1985 in which the Reporting Entity first applied for tax credits under the SR&ED program.

We understand that many of you will not be able to answer this section because you were not part of the Reporting Entity at the relevant time, or there are simply insufficient records available of this period. Remember that estimates are what is required, but, if you have no information for this period, please proceed to the section entitled **Audits** which follows Question 26.

22. (a) What was the Start-up year for the Reporting Entity?

    19_____

    (b) What was the approximate total value of SR&ED expenditures in the Start-up Year
    $_____

23. We are interested in how long it took personnel in the Reporting Entity to learn about the SR&ED tax credit program and to train staff in order to comply with its provisions. Estimate:

    (a) the number of hours spent by technical employees, engaged in these activities:

    # hours____

    (b) the number of hours spent by accounting employees, engaged in these activities:

    # hours____

    (c) the amount paid to outside consultants, engaged in these activities:

    $_____

24. When the SR&ED tax credit program is first used, typically new forms and systems must be designed by the Reporting Entity in order to document all activities and costs that must, subsequently, be reported. For example, it may be necessary to introduce new accounting systems. Estimate:

    (a) the number of hours spent by technical employees, designing these forms and systems;

    # hours____

    (b) the number of hours spent by accounting employees, designing these forms and systems;

    # hours____

    (c) the amount paid to outside consultants, designing these forms and systems:

    $_____

NO. _____

25. The costs you incurred in the Start-up Year and which you have identified in Questions 23 and 24 were clearly caused by the SR&ED tax credit program. It is possible, however, that the activities to which those costs related themselves may have additional benefits for the way in which the R&D program is managed. For example, your cost control system for SR&ED may now be more effective in managing the R&D function. Did the Reporting entity experience such additional benefits?

    Yes ❑

    No ❑

    If your answer to this question is **NO, please skip Question 26.**

26. Now consider those additional benefits that you identified in Question 25. Estimate the percentage of the total time that you reported in Questions 23 and 24 that would have been used achieving **ONLY** those benefits:

    [For example, I reported that our staff spent a total of 100 hours on the activities in Questions 22 and 23. It would have taken us approximately 50 hours to set up systems to achieve the benefits I believe accrued from these systems, over and above compliance with the SR&ED tax credit program requirements. My answer to this question will therefore be 50 percent.]

    _____%

AUDITS

This section examines the Reporting Entity's experience of SR&ED tax credit program audits.

NOTE: It is possible that you do not have sufficient experience of these audits to answer the following questions in part or in full, and you are unable to find out from others. We need to know the extent of the information you are providing:

Are you able to answer for **ALL** of the audits that may have taken place in respect of years **ENDING AFTER** December 31, 1985?

Yes ❑

No ❑

If your answer is **NO**, identify the years from which you **ARE** able to provide information:

19____ through to and including 19____.

NO. _____

27. Please complete the following table by answering "yes" or "no" in each box except for box (5) where you should answer "increased," "decreased" or "unchanged." **NOTE** that it is likely that for the more recent years, you will not know yet whether the Reporting Entity will undergo audits or reassessments, etc. Where such uncertainty exists, please answer one of "Likely," OR "Unlikely," OR "Don't Know":

In respect of Fiscal period ending in...	**(1)** Reporting Entity Claimed SR&ED tax credits	**(2)** Reporting Entity Underwent a Technical Audit by Scientific Advisors	**(3)** Reporting Entity had an audit of claims by Revenue Canada Auditors	**(4)** The Revenue Canada Audit was completed. That is, a *Notice of Assessment* was confirmed or a *Notice of Reassessment* was issued	**(5)** Following the Revenue Canada audit, were the SR&ED tax credits allowed increased, decreased or unchanged compared to the SR&ED tax credits claimed	**(6)** A *Notice of Objection* was filed
1986						
1987						
1988						
1989						
1990						
1991						
1992						
1993						
1994						

28. For this question we want to know how often Revenue Canada audits the SR&ED tax credit claim of the Reporting Entity, independent of how many years are audited each time. So, for example, if you had an audit for years 1987, 1988, and 1989, we would want you to describe this as one audit.

What is the ***total number*** of separate SR&ED tax credit related audits that the Reporting Entity has experienced that covered years ending after December 31, 1985?

_____

29. Please refer to the most recent audit for which you indicated in Question 27 that either a *Notice of Assessment* was confirmed or a *Notice of Reassessment* was received.

(a) Did this audit cover more than one tax year?

Yes ❑
No ❑

NO. _____

If "Yes," how many years did it cover? _____

(b) Did the audit cover a period for which you made a retroactive filing (i.e., you learned of your eligibility for SR&ED tax credits after filing your corporate tax return, and subsequently amended your return to claim the credits?)

Yes ❑

No ❑

(c) Estimate, for the time up until the point of Assessment or Reassessment and for all the years under audit:

(i) the number of hours spent by technical employees, complying with the audit:

hours_____

(ii) the number of hours spent by accounting employees, complying with the audit:

hours_____

(iii) the amount paid to outside consultants, complying with the audit:

$_____

30. This question is relevant where the Reporting Entity has, for a year ending after December 31, 1985, had a reassessment which you have pursued further. This question is designed to capture the cost of compliance from the time of Assessment or Reassessment until the final resolution of the matter. Please answer for the most recent year in which you indicated in Question 27 that a Notice of Objection was filed. If the matter is still unresolved, please estimate the relevant costs until resolution. Estimate, for the time from Assessment or Reassessment until final resolution of the matter:

(a) the number of hours spent by technical employees, pursuing this matter:
hours_____

(b) the number of hours spent by accounting employees, pursuing this matter:
hours_____

(c) the amount paid to outside consultants, for pursuing this matter:
$_____

31. This question relates to your most recent audit. In this question we use the term "tax credits." Please interpret this as meaning the tax credits for which the Reporting Entity was eligible (not, for example, only those for which you may have received a cash refund). In your most recently complete SR&ED tax credit related audit (the audit referred to in Question 29), what were the:

(a) amount of SR&ED tax credits claimed on filing?
$_____

(b) amount of SR&ED tax credits allowed on Revenue Canada audit?
$_____

NO. _____

(c) amount of SR&ED tax credits allowed on the resolution of the Notice of Objection (if applicable)?

$_____

32. If any tax credits applied for in your most recently completed SR&ED tax credit audit were disallowed, was this ***primarily*** because:

Projects or activities were found to be ineligible	❑
Costs were found to be ineligible	❑
Both of the above reasons were significant	❑
Don't know	❑
Other reasons	❑

(*Please describe briefly*)_____

_____

_____

GOVERNMENT R&D GRANTS

The following questions deal with the cost of obtaining and retaining federal and provincial government R&D grants. If the Reporting Entity has not received any government R&D grants, please **GO TO Question 41**.

33. Of the total dollar amount of R&D grants applied for by the Reporting Entity, estimate the percentage that is (in general) awarded?

%_____

34. The process of applying for government R&D grants may carry over several years and may cease at a range of given times. What was the most recent year in which the Reporting Entity investigated the possibility of obtaining a Provincial or Federal R&D grant?
19____

35. There is a wide range of provincial and federal R&D grant programs. It takes time to find out about the specific programs and assess their relevance to your organization. For the year you have identified in Question 34 above as being the most recent year in which the Reporting Entity investigated R&D grant programs, estimate:

(a) the number of hours spent by technical employees, learning about and assessing programs:

hours_____

(b) the number of hours spent by accounting employees, learning about and assessing programs:

hours_____

(c) the amount paid to outside consultants, for learning and assessing programs:

$_____

NO. _____

36. For the balance of the questions, we are interested in capturing the compliance costs for **one particular R&D grant** of which you have experience, from application to completion.

Please select **ONE** significant R&D project for which you received a grant and that you have sufficient knowledge of in order to answer the following questions. It is important that the project has reached completion and by this we mean that all requirements for the project are complete, R&D grant monies have been paid, and any audit of the R&D grant is complete. From now on, this R&D grant you have chosen will be called ***the R&D Grant.***

(a) Name the program under which the R&D Grant was awarded; (for example, I.R.A.P. or D.I.P.P.):

_____

(b) Identify the responsible funding Agency/Department:

_____

(c) What was the size of the R&D Grant?

$_____

(d) List the years of the R&D Grant, from the date the R&D began until the date the R&D was completed:

19_____ through to and including part or all of 19_____

(e) Estimate the percentage of total R&D costs associated with this project that the R&D Grant covered:

_____%

(f) If the R&D Grant did not cover 100 percent of the cost of the project, did the Reporting Entity also claim SR&ED tax credits on the balance of the cost of the project?:

Yes ❑

No ❑

If your answer is "NO," why did the Reporting Entity not claim any SR&ED tax credits?

_____

_____

37. All government R&D grants require developing and negotiating the terms of the proposals, and completing of application forms. Estimate, for the R&D Grant:

(a) the number of hours spent by technical employees, completing the documentation:

hours_____

NO. _____

(b) the number of hours spent by accounting employees, completing the documentation:

hours_____

(c) the amount paid to outside consultants, for completing the documentation:

$_____

38. Government R&D grant programs require recipients to incur compliance costs including those associated with tracking expenditures, providing reports, negotiating the direction of research, and the incremental cost of third party audits (over and above annual financial statement audits and **NOT** including the cost of complying with audits by the granting agency). Estimate, for the life of the R&D Grant:

(a) the number of hours spent by technical employees, on these additional tasks:

hours_____

(b) the number of hours spent by accounting employees, on these additional tasks:

hours_____

(c) the amount paid to outside consultants, for these additional tasks:

$_____

39. If the Reporting Entity has experienced audits of the R&D Grant by the government granting agency, it will have incurred additional compliance costs. Estimate, for the life of the R&D Grant:

(a) the number of hours spent by technical employees, complying with the audit:

hours_____

(b) the number of hours spent by accounting employees, complying with the audit:

hours_____

(c) the amount paid to outside consultants, for complying with the audit:

$_____

40. Questions 36 through 39 were designed to capture the total costs of complying with the particular program that funded the R&D Grant. It is possible that there are additional compliance costs that have not been described above:

(a) Please describe the nature of these costs:_____

_____

_____

(b) Estimate, for the life of the R&D Grant:

NO. _____

(i) the number of hours spent by technical employees, complying with the audit:

hours____

(ii) the number of hours spent by accounting employees, complying with the audit:

hours____

(iii) the amount paid to outside consultants, for complying with the audit:

$_____

SUMMARY

In this concluding section, we would like your opinion/reaction to the compliance costs of the SR&ED tax credit program and government R&D grants.

41. On balance, and relative to the benefits received, do you consider the compliance costs of the SR&ED tax credit program to be: (circle one)

Low		**Acceptable**		**High**
1	2	3	4	5

If the Reporting Entity has not received an R&D Grant, please go to Question 44.

42. On balance, and relative to the benefits received, do you consider the compliance costs of R&D Grants to be: (circle one)

Low		**Acceptable**		**High**
1	2	3	4	5

43. In this question we want you to compare your impressions of the compliance costs of the SR&ED tax credit program and R&D Grants, relative to the benefits received. In your opinion, are the:

compliance costs of the SR&ED tax credit program higher than the compliance costs of R&D Grant programs. ❑

compliance costs of R&D Grant programs higher than the compliance costs of the SR&ED tax credit program. ❑

compliance costs of the SR&ED tax credit program and the compliance costs of R&D Grant programs about the same. ❑

44. Do you have any additional comments about the compliance costs of either the SR&ED tax credit program or R&D Grant programs that you would like to make? If so, please feel free to express them now:

_____

_____

APPENDIX B

Associations Providing Respondents

Aerospace Industries Association of Canada
Canadian Bankers Association
Canadian Chemical Producers' Association
Computer Technology Network Kitchener-Waterloo
Information Technology Association of Canada
Mississauga Technology Association
Motor Vehicle Manufacturers Association
Ottawa-Carleton Economic Development Corporation
Toronto Technology Network
York Technology Association

APPENDIX C

Multiple Regression Analysis of Annual Compliance Costs

In order to assess the relative contribution of the different factors affecting annual compliance costs, a regression equation was estimated. The equation has, as a dependent variable, the natural logarithm of annual compliance cost. The independent variables are:

CLAIM: the natural logarithm of the amount of SR&ED credits claimed.

EMP: the natural logarithm of the number of employees of the firm.

RD80: a dummy variable which takes on the value of one if the proportion of the firm's employees involved in R&D (including support staff) is 80 percent or greater.

R: a dummy variable which takes on the value of one if the firm is eligible for refundable SR&ED credits.

NRF: a dummy variable which takes on the value of one if the firm is foreign-controlled.

RDUM: the product of R and CLAIM.

NRFDUM: the product of NRF and CLAIM.

The variable EMP is expected to have a negative sign on the basis that for two firms with the same size of SR&ED credits, the larger firm would be expected to have more experience with tax compliance work in general.

The variable RD80 is intended to capture the idea that compliance is much simpler for a firm whose sole business is R&D. For a firm which also has many non-R&D activities, there is a difficult allocation and tracking problem in sorting out which activities and costs are eligible and which are not.

The variables R and RDUM are dummy variables relating to refundable-credit firms. They allow the intercept and slope (with respect to CLAIM) respectively to differ from the base case of a Canadian-controlled firm with non-refundable credits. Similarly, the variables NRF and NRFDUM are intercept and slope dummies for foreign-controlled firms.

Form T661 asks the firm to identify the type of activity or industry the R&D effort concerns. This was considered as a possible variable, but it seemed to be insufficiently precise. For example, research in pollution control could range from a manufacturer trying to solve the firm's own problems with shop-floor people, to a small high-tech company inventing pollution control technologies.

Table 9
Regression Equations for Annual Compliance Cost of SR&ED Credits

Initial Equation			
Explanatory Variable	Expected Sign	Coefficient	t-statistic
CLAIM	+	0.293	1.718
EMP	-	0.206	1.426
RD80	-	0.588	1.436
R	?	-0.759	0.222
NRF	?	0.002	0.001
RDUM	?	0.100	0.373
NRFDUM	?	0.019	0.114
Intercept	4.29		
Standard error	0.86		
R-square	0.60		
Adjusted R-square	0.50		
F-statistic	6.36		
N	37		
Dependent variable: - mean - std dev.	9.73 1.23		
Final Equation			
Explanatory Variable	Expected Sign	Coefficient	t-statistic
CLAIM	+	0.437	7.229
Intercept	4.00		
Standard error	0.88		
R-square	0.52		
Adjusted R-square	0.51		
F-statistic	52.26		
N	49		
dependent variable: - mean - std dev..	9.85 1.27		

The use of natural logarithms with the dependent variable and the size-related independent variables is standard in this literature (see for example the Slemrod and Blumenthal papers cited in footnote 5 and the Vaillancourt monograph, p. 69 cited in footnote 3). In particular, this kind

of non-linear relationship between compliance costs and claim size is suggested in Table 4; annual compliance costs as a percentage of the claim increases with the size of the claim.[1]

Table 9 gives the regression results. None of the variables are significant at the 0.05 level, although the coefficient relating to the claim size is close to being significant and is also of the expected sign. The coefficient relating to whether 80 percent or more of the firm's employees are associated with R&D is of the wrong sign, as is the coefficient relating to the size of the firm. The R-squared value is 60 percent.

Since none of the coefficients in this equation is statistically significant, the set of variables was reduced in a step-wise fashion until all variables were significant. As shown in Table 9, only the natural log of the SR&ED claim remained in the equation at that point. The R-squared of this equation is 0.51, which is little reduced from the initial 0.60. These R-squared values are not strictly comparable, however, since the number of observations has increased from 37 to 49.[2] The implication of these results is that size is the only significant variable determining annual compliance costs. The coefficient of 0.44 is the elasticity of annual compliance cost with respect to SR&ED claims. In other words, a 100 percent increase in the SR&ED claim produces a 44 percent increase in annual compliance costs. Therefore, annual compliance costs increase, but less than proportionately, when the SR&ED claim increases.

---

1 Less satisfactory results were obtained from other functional forms which do not require a constant elasticity of annual compliance costs with respect to total claims. One such form tried annual compliance cost per dollar of claim as the dependent variable together with non-logarithmic versions of the independent variables described above.

2 The variables EMP and RD80 have a number of missing values since both are derived from the T661 form. As discussed above, the data on this form are not of high quality.